

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A surgical fluid pump system for transporting a sterile fluid from a source to a surgical instrument, comprising:

a drive system; and

a pump system comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

first and second pumps, each of said first and second pumps having a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, each of said pumps having a suction cycle for drawing in the sterile fluid and an output cycle for ejecting the sterile fluid, wherein a separately controllable drive motor is provided for each of said first and second pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the first and second pumps; and

conduit and valve devices that provide a sterile fluid path between said inlet, said pumps and said outlet, wherein

the pump system is releasably connected to the drive system, and

said drive system drives said pump system in such a way that said suction cycle of each pump is shorter than said output cycle of each pump and in such a way that the output cycles of the first and second pumps overlap so that said fluid is supplied to said outlet with a substantially constant pressure.

2. (Currently amended) A surgical fluid pump system for transporting a sterile fluid from a source to a surgical instrument, said system comprising:

a drive system; and

a disposable pump system comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

three pumps, each pump having a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, each of said pumps having a suction cycle for drawing in the sterile fluid and an output cycle for ejecting the sterile fluid, wherein a separately controllable drive motor is provided for each of said three pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the three pumps; and

conduit and valve devices that provide a sterile fluid path between said inlet, said pumps and said outlet, wherein

the pump system is releasably connected to the drive system, and

said drive system drives said pump system in such a way that the suction cycle of one or more of the pumps overlap with the and-output cycleycles of one or more of the remainingsaid pumps overlap one another.

3. (Currently amended) The surgical fluid pump system according to claim 1, wherein

said pump system comprises a first pump and a second pump, and

the suction cycle in the first pump is shorter than the output cycle in the second pump and conversely that the suction cycle in the second pump is shorter than the output cycle in the first pump.

4. (Previously presented) The surgical fluid pump system according to claim 1, wherein said drive system drives said pump system in such a way that said output cycles overlap.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Previously presented) The surgical fluid pump system according to claim 2, wherein said drive system comprises a controllable rotary drive motor configured and adapted to mechanically drive said piston of each of said pumps.

9. (Canceled)

10. (Previously presented) The surgical fluid pump system according to claim 2, wherein said drive system drives said pump system in such a way that said output cycles overlap.

11. (Previously presented) The surgical fluid pump system according to claim 2, wherein said drive system drives said pump system in such a way that said fluid is supplied to said outlet with a substantially constant pressure.

12. (Canceled)

13. (Canceled)

14. (Currently amended) A surgical fluid pump system for transporting a sterile fluid from a source to a surgical instrument, said system comprising:

a drive system; and

a pump system comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

first and second pumps, each of said first and second pumps having a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, each of said pumps having a suction cycle for drawing in the sterile fluid and an output cycle for ejecting the sterile fluid, wherein a separately controllable drive motor is provided for each of said first and second pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the first and second pumps; and

conduit and valve devices that provide a sterile fluid path between said inlet, said first and second pumps and said outlet, wherein

the drive system drives said pump system in such a way that, for each of said first and second pumps, the suction cycle of said first pump is shorter than the output cycle in the second pump and vice versa and in such a way that the output cycles of the first and second pumps overlap,

the pump system is releasably connected to the drive system, and

said pump system is constructed as a disposable unit.

15. (Currently amended) The surgical fluid pump system according to claim 14, wherein said drive system drives said first and second pumps in a push-pull manner in such a way that the suction cycle in the first pump is shorter than the output cycle in the second pump and that the suction cycle in the second pump is shorter than the output cycle in the first pump ~~or conversely.~~

16. (Previously presented) The surgical fluid pump system according to claim 14, wherein the drive system drives said pump system in such a way that the fluid is supplied to the outlet with a substantially constant pressure.

17. (Previously presented) The surgical fluid pump system according to claim 14, wherein

said drive system comprises a controllable rotary drive motor configured and adapted to mechanically drive said piston of each of said first and second pumps.

18. (Canceled)

19. (Currently amended) A surgical fluid pump system for transporting a sterile fluid from a source to a surgical instrument, comprising:

a drive system; and

a pump system comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

at least three pumps, each of said pumps having a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, each of said pumps having a suction cycle for drawing in the sterile fluid and an output cycle for ejecting the sterile fluid, wherein a separately controllable drive motor is provided for each of said at least three pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the at least three pumps; and

conduit and valve devices that provide a sterile fluid path between said inlet, said pumps and said outlet, wherein

the pump system is releasably connected to the drive system, and

the drive system drives said pump system in such a way that, for each of said at least three pumps, the suction cycle is shorter than the output cycle and in such a way that the suction cycle of one or more of the pumps overlap with the and output cycles of said one or more of the remaining three pumps overlap one another.

20. (Previously presented) The surgical fluid pump system according to claim 19, wherein the drive system drives said pump system in such a way that the output cycles overlap.

21. (Previously presented) The surgical fluid pump system according to claim 19, wherein the drive system drives said pump system in such a way that the fluid is supplied to the outlet with a constant pressure.

22. (Canceled)

23. (Previously presented) The surgical fluid pump system according to claim 19, wherein the pump system is constructed as a disposable unit.

24. (Canceled)

25. (Previously presented) The surgical fluid pump system according to claim 19, wherein said drive system comprises a controllable rotary drive motor configured and adapted to mechanically drive said piston of each of said pumps.

26. (Canceled)

27. (Currently amended) A surgical fluid pump system for transporting a sterile fluid from a source to a surgical instrument, said system comprising:

a drive system; and

a pump system comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

at least three pumps, each of said pumps having a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, each of said pumps having a suction cycle for drawing in the

sterile fluid and an output cycle for ejecting the sterile fluid, wherein a separately controllable drive motor is provided for each of said at least three pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the at least three pumps; and

conduit and valve devices that provide a sterile fluid path between said inlet, said pumps and said outlet, wherein

the pump system is releasably connected to the drive system, and

the drive system drives said pump system in such a way that the suction cycle of one or more of the pumps overlap with the and output cycles cycle of one or more of the remaining pumps overlap one another.

28. (Previously presented) The surgical fluid pump system according to claim 27, wherein the drive system drives said pump system in such a way that the fluid is supplied to the outlet with a constant pressure.

29. (Canceled)

30. (Previously presented) The surgical fluid pump system according to claim 27, wherein the pump system is constructed as a disposable unit.

31. (Canceled)

32. (Previously presented) The surgical fluid pump system according to claim 27, said drive system comprises a controllable rotary drive motor configured and adapted to mechanically drive said piston of each of said pumps.

33. (Canceled)

34. (Currently amended) A disposable surgical fluid pumping device for pumping a sterile fluid from a source to a surgical instrument, comprising:

an inlet for establishing a fluid connection to said source;

an outlet for establishing a fluid connection to said surgical instrument;

a plurality of pumps, each of said pumps including a piston that contacts said sterile fluid to apply a pressure to said sterile fluid, wherein a separately controllable drive motor is provided for each of said plurality of pumps;

an electronic control system for controlling the drive motors by setting a piston velocity profile for each of the plurality of pumps;

conduit and valve devices that provide a sterile fluid path between said inlet, each of said plurality of pumps and said outlet, wherein

said valve devices prohibit an outflow of said sterile fluid at said inlet and prohibit an inflow of said sterile fluid at said outlet, and

a portion of said sterile fluid path from said inlet to a respective one of said pumps is common to a portion of said sterile fluid path from said respective one of said pumps to said outlet.